SmartObjects: Sixth Workshop on Interacting with Smart Objects

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Abstract

The emergence of smart objects has the potential to radically change the way we interact with technology. Through embedded means for input and output, such objects allow for more natural and immediate interaction.

The SmartObjects workshop will focus on how such embedded intelligence in objects situated in the user's physical environment can be used to provide more efficient and enjoyable interactions. We discuss the design from the technology and the user experience perspective.

Author Keywords

smart objects; HCI; novel interaction; multimodal and adapter interaction; context-awareness; embodied interaction; tangible interaction; enabling techologies

ACM Classification Keywords

H.5.m [User Interfaces: Miscellaneous]

Interacting With Smart Objects

In the latest issue of the *Hype Cycle for Emerging technologies*, the analysts envision that "[s]mart machine technologies to be the most disruptive class of innovations over the next 10 years due to their computational power, scalability in analyzing large-scale data sets, and rapid advances in neural networks." [13].

This forecast is based on a continuous trend on embedding computing and communication capabilities into everyday objects, turning them into smart objects [5]. Examples range from smart (tangible) objects [4] over smart cars [14] to even large-scale urban infrastructures [10]. Other recent examples deal with the fabrication of smart objects [12], smart sensory augmentation [11] and smart spaces [3].

However, the interaction with such smart objects is still a challenge. While other venues have focused on the many technical challenges of implementing smart objects, far less research has been conducted on how the intelligence situated in these smart objects can be applied to improve their interaction with the users.

Workshop Content

The SmartObjects workshop will focus on how intelligence embedded in smart objects can be used to provide more efficient and enjoyable interactions with users. In this workshop, we explore the various underlying research fields and their unique challenges to improving interaction with and usage of smart objects. This includes topics such as appropriate data processing of sensor data embedded in smart objects, self-representation of the behavior of smart objects, interaction techniques to control and query smart objects as well as methods, processes, and tools to engineer and fabricate smart objects. More information about the previous workshops can be found on our website at http://www.smart-objects.org/.

Workshop History

The SmartObjects workshop was established in 2011 in conjunction with the ACM International Conference on Intelligent User Interfaces, IUI 2011, in Stanford, California, USA. After a break in 2012, the workshop continued with IUI for the next five years.

Over the years, we found a constant shift in the topics of the workshops, ranging from interaction, over visualization to more general HCI focused contributions. Therefore, after six successful years as an IUI satellite workshop, we decided to move the workshop to CHI. We strongly believe that the general topic of the workshop - interaction with smart objects - as well as the many years of experience of the organizers will lead to a successful SmartObjects '18 workshop that can make a strong contribution to the CHI community.

Participants and Workshop Publicity

The workshop will have an interdisciplinary appeal, addressing researchers as well as industry. We expect participants from the areas of CHI, IUI, UbiComp, IoT and related areas like psychology and product design. The program committee comprises researchers and practitioners active in these research areas and who, moreover, plan to encourage participants, also from their institutes, to submit to this workshop. Thereby, we ensure active participation in preparation and execution of the workshop. We will especially encourage young scientists and Ph.D. students to explore their research topics with domain experts. The call for papers and participation will be distributed through well-established mailing lists and websites in various research communities in addition to promotions through our website and OSNs. We expect approximately 15 participants.

The results of the workshop will be made available on the workshop website as well as in dedicated proceedings. This publication strategy will attract higher quality submissions, and increase the exposure and impact of the workshop before and after the event.

Workshop Plan

We plan for a full-day workshop with submissions in the following three categories:

- position papers and posters (4 pages) focusing on novel concepts or works in progress,

- demo submissions (4 pages) and

- full papers (max 8 pages) covering a finished piece of novel research.

Our goal is to attract high-quality submissions from several research disciplines to encourage and shape the discussion, thus, advancing the research of interacting with smart objects. An invited talk of a renowned senior researcher will open the workshop with a keynote to inspire the participants. To spark further in-depth discussions on selected topics, we plan a poster and demo session. We will collect topics during the workshop whereby we want to focus on combining complementary topics. Therefore, the workshop chairs will take special care about those topics that receive most attraction during the discussion. This will serve as a starting point for an interdisciplinary discussion. In the previous workshops, this strategy led to a lively and productive discussion also during the remainder of the conference.

Organizers and Program Committee

The organizers were already members of the previous workshops on interacting with smart objects, held in conjunction with IUI 2011 [2] and 2013 to 2017 [6, 7, 9, 8, 1].

Florian Müller is a researcher at Telecooperation Lab in TU-Darmstadt, Germany. His research focuses on exploring and studying novel ways of interaction with Head Mounted Displays and body-based interfaces in smart spaces.

Dirk Schnelle-Walka is a Functional Owner for Speech at the Connected Car Division of Harman International. His main research interest is on multimodal interaction in smart spaces and automotive.

Tobias Grosse-Puppendahl Tobias Grosse-Puppendahl is an innovation manager at Porsche. In his research, he investigates and develops new methods of sensing human interactions with devices and environments.

Kris Luyten is a professor at the Expertise Centre for Digital Media - Flanders Make, Hasselt University. His research focuses on engineering interactive systems, intelligible interfaces and HCI in general.

Oliver Brdiczka is the co-founder and VP of AI Research at Stella.ai. Before that, he was Principal Data Scientist at Vectra Networks and area manager of Contextual Intelligence at PARC focusing on constructing models for human activity from various sensor inputs using machine learning.

Sebastian Günther is is a doctoral researcher at the Telecooperation Lab (TU Darmstadt). His research interests are multimodal guidance and human-computer interaction, utilizing ubiquitous systems.

Markus Funk is a post-doctoral human-computer interaction researcher at the Technical University of Darmstadt. He is interested in Augmented Reality, Virtual Reality, and Human-Drone Interaction.

Niloofar Dezfuli is a postdoc fellow at the Technical University of Darmstadt. She is interested in the field of Human-Computer Interaction and Multimedia. This has included on-body user interfaces, mobile interaction, social participation and user engagement.

Max Mühlhäuser is a full professor and heads the Telecooperation Lab at TU Darmstadt. He has over 300 publications on ubicomp, human-computer interaction, intelligent user interfaces, e-learning and multimedia.

Florian and Dirk will be leading the workshop at the conference. The preliminary list of program committee members is as follows: **Bo Begole** (Apple, USA), **Marco Blumendorf** (smartB, Germany), **Jingyuan Cheng** (TU Braunschweig, Germany), **Aba-Sah Dadzie** (Open University, United Kingdom), **Alexander Kröner** (Technische Hochschule Nürnberg, Germany), **Germán Montoro** (UAM, Spain), **Patrick Reignier** (Inria, France), **Boris de Ruyter** (Philips, Netherlands) **Geert Vanderhulst** (Alcatel-Lucent Bell Laboratories, Belgium), **Raphael Wimmer** (Universität Regensburg, Germany) and **Massimo Zancanaro** (Fondazione Bruno Kessler, Italy). PC members will help the organizers to publicize the event in more scientific communities and allow for a competent peer-review process. All submissions will be peer-reviewed by at least two reviewers.

Call for Participation

There is an ongoing trend on embedding computing and communication capabilities into everyday objects, turning them into smart objects. Examples range from smart (tangible) objects over smart cars to even large-scale urban infrastructures. Other recent examples deal with the fabrication of smart objects, smart sensory augmentation, and smart spaces. This workshop will focus on how the intelligence situated in these smart objects can be used to provide more efficient and enjoyable interaction possibilities for the users. The underlying research fields pose unique challenges and opportunities for designing the interaction with such devices.

We seek high quality contributions that explore the combination of intelligent interaction with the specific characteristics of smart objects. Topics include but are not limited to:

- novel interaction concepts for smart objects

- self-explanatory smart objects

- fabrication of smart objects

- smart sensory augmentation and smart spaces

- smart cars

- multimodal interaction

- embodied and tangible interaction

- context-awareness

- accessibility through smart objects

- intelligibility of smart objects

- user studies and evaluation techniques

- technology and models required for enabling the interaction with smart objects

- situation models and reasoning

Submission
We invite submissions as position papers (up to 8 pages, incl. references) that describe a motivated opinion or viewpoint on interaction with smart objects, identifies an open issue or important problem, or presents work in progress.

All submissions will be peer-reviewed by at least 2 peers. Besides based on general contributions, submissions will also be selected on their potential to initiate discussion. All submissions should be prepared according to the CHI Extended Abstracts Format and submitted in PDF through the workshop management system[1]. Accepted submissions

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[1] https://easychair.org/conferences/?conf=smartobjects18

will be made available for workshop participants only. In addition, we invite every accepted submission to appear in our proceedings published through CEUR-WS.org. Copyright is retained by the authors. Thus, papers can be submitted for other venues that allow this. Please note that at least one author must register for the workshop and one day of the conference.

Acknowledgements

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